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The University of New Mexico Bulletin

Ethnobiological Studies in the American Southwest

III. The Ethnobiology of the Chiricahua and Mescalero Apache

A. The Use of Plants for Foods, Beverages and Narcotics

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THE UNIVERSITY OF NEW MEXICO
Whole Number 297 November 15, 1936
Biological Series, Vol. 4, No. 5
Published twice a month by the University of New Mexico
Albuquerque, New Mexico
Entered as Second Class Matter, May 1, 1906, at the post office at Albuquerque, New Mexico, under Act of July 16, 1894
University of New Mexico Press
1936

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INTRODUCTION TO MESCALERO AND CHIRICAHUA APACHE CULTURES[1]

Well over one hundred plants used by Mescalero and Chiricahua Apache Indians for food, drink, and narcotics are listed and discussed in the pages which follow this introduction. These two tribes can be treated together in such context because of the close correspondences between them in most aspects of material and non-material culture, because they inhabited contiguous areas in the same general ecological region, and because the plants of the region utilized by them and the methods of preparation were remarkably alike for both peoples.

Little guess-work or uncertainty has been permitted in the material here presented. Trips were made into the field with Apache informants who found and gathered specimens of the plants formerly used by their people, and at this time the account of manner of utilization was recorded. The specimens were pressed, mounted, and later identified.

The list of names to be found at the back of this bulletin is by no means a complete inventory of the plants used by these Apache for the purposes we are considering. The work was conducted during a drought period and specimens of a number of plants were not obtained. Again, because of immaturity, or for some other reason, certain plants were never positively identified and the data pertaining to them have been excluded. Then too, the present Mescalero Apache

1. The first section of this bulletin (with the exception of the unit on geographical setting) has been prepared by Dr. M. E. Opler and the second section by Dr. E. F. Castetter. Unless otherwise noted, the facts concerning the preparation and use of plants by the Chiricahua and Mescalero Apache have been gathered during the years 1931-34 in the course of ethnological field-work made possible by the University of Chicago, Columbia University, the Southwest Society, the National Research Council, Social Science Research Council, and the Laboratory of Anthropology of Santa Fe. The authors are very much indebted to Professor A. L. Hershey, of New Mexico State College, who identified a number of the plant specimens; to Dr. Kirk Bryan, of Harvard University, for suggestions bearing on the geographical setting of these Apache; and to Dr. Harry Hoijer, of the University of Chicago, for his aid in the translation of Apache plant names. Thanks are due to many Apache informants, and especially to Charles Smith and Sarah Kenoi for assistance in the collection of the plants.

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114 126 (657) Then too, the present Mescalero Apache Reservation upon which both of these tribes are now housed is but a fraction of the former range of these natives. Since it was not practicable to traverse this large area with informants, many plants which they had described were never recovered and identified. Yet, despite these unavoidable gaps in the record, it was possible to gather and identify the principal wild food staples of these two Apache tribes and to offer a fair sampling of that aspect of their food economy which is based on wild plants.

128 Lists, whether they be of plants or other culture traits, and descriptions of one aspect of a culture only, are often very misleading. It is necessary to know something about other aspects of the culture, that the place and importance of plant lore and plant utilization may be appreciated. It is with the purpose of placing the Mescalero and Chiricahua use of plants for foods, drinks, and narcotics in context and in relation to the cultural whole that this sketch of Apache life is offered.

197 LINGUISTIC AND ETHNIC AFFILIATIONS

The Mescalero and Chiricahua Apache speak languages of the Athabaskan stock, one of the most widespread linguistic families of North America, whose representatives range from Alaska to the American Southwest. Athabaskan languages have been separated into three major linguistic groups, a Northern, a Pacific, and a Southern. The tribes which constitute the Southern Athabaskan division are the Navaho and Apache. Thus our Mescalero and Chiricahua Apache are most closely affiliated linguistically with the Jicarilla Apache, the Lipan Apache, the Kiowa Apache,[2] the

2. Because of their Plains-like material culture and their close association with the Kiowa Indians of the Plains, the Kiowa Apache have hitherto been treated apart from other Southern Athabaskan-speaking peoples. A tale, for which there is little substantiation, of a former home of these people in the Black Hills of South Dakota and of a close linguistic association between them and the Sarsi has been preserved in American anthropology since the days of Mooney. Recent linguistic work by Dr. Harry Hoijer, of the University of Chicago, has definitely established Kiowa Apache as a Southern Athabaskan language. A study of Kiowa social organization by Dr. J. G. McAllister (Doctoral Thesis, University of Chicago, 1935) gives evidence of a kinship system and social forms almost identical with those of the Jicarilla and Lipan Apache. See Opler (21).

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Western Apache (Northern Tonto, Southern Tonto, White Mountain or Coyotero, Cibecue, and San Carlos Apache), and the Navaho. The dialects of the Chiricahua and Mescalero are usually close—closer, in all probability, than the dialects of any two other Southern Athabaskan tribes. 197

Ethnic ties point in the same direction. With due allowance for individual tribal variations and the influence of adjoining culture areas, there emerges a basic core of mythology, belief, and social organization common and peculiar to these Southern Athabaskans. In this respect the Mescalero and Chiricahua are again found to be most closely associated. In fact, the evidence of language, custom, and geographical location strongly suggests that these two tribes represent a late differentiation of a parent stock. 184 619 10

LOCATION

The land which the Mescalero claim was theirs in aboriginal times lay principally in what is now New Mexico. The eastern limit of their recognized territory was the flat country to the east of Hondo, but expeditions for salt, or to hunt antelope and buffalo often took them far beyond this point and many times east of the Pecos. Occasionally they wandered as far north as Santa Fe. On the south their range extended into northwestern Texas and into northern Chihuahua and Coahuila, Old Mexico. The Rio Grande was their western boundary. The favorite Mescalero haunts were to be found in the San Andreas, Sacramento, and Guadalupe mountain ranges. Places within this central mountainous area are the ones most frequently mentioned in the old stories, and from this section hunting expeditions and raiding and war parties would start out for the more remote parts of Mescalero territory. 131 [224] [721]

The Chiricahua ranged through western New Mexico, southeastern Arizona, and southward into Old Mexico. Their eastern boundary began at the Rio Grande. They ranged westward approximately to the eastern boundaries of the present White Mountain and San Carlos Indian reser-

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vations. The territory they claimed reached the Pueblo district of Laguna and Acoma to the north, and on the south their lands extended into Chihuahua and Sonora, Old Mexico.

BAND AND LOCAL GROUP

The Mescalero were divided into two bands. One was called "Edge of the Mountains People." The members of this band stayed most often in the vicinity of the Sacramento and Sierra Blanca mountain ranges. The second band stayed farther to the east and the smaller offshoots of it, which we may term local groups, often camped on the flats in times of peace and so gave the name of "Plains People" to the band. These two Mescalero bands were one in language and customs and, though each had separate leaders, recognized themselves as a single people.

The Chiricahua bands were three in number. The eastern band, whose territories joined those of the Mescalero at the Rio Grande, controlled the territory of southwestern New Mexico and has been given a variety of names throughout the literature. Those occurring most frequently are Warm Springs or Ojo Caliente Apache, Coppermine Apache, Mimbreños, and Mogollones Apache. The native name for this band is *tcihene*, which probably means "Red Paint People." In historic times this band was led by the well-known chieftain, Victorio.

To the south and west of the "Red Paint People," ranging through a portion of southwestern New Mexico and through southeastern Arizona, a second Chiricahua band, the *tcokanene*, was to be found. The derivation of the native term is uncertain. It was this band, often called in the literature Cochise Apaches after their leader, Cochise, which controlled Apache Pass and with which the government had a great deal of trouble during the Indian wars. It was this band, too, which was instrumental in giving the name Chiricahua to the whole tribe. One local division or local group of this band had as its main refuge the rocky indentations along a mountain range called by the Apache *tseyata*, "Rock Pocket."

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Pocket." They were, therefore, called "Rock Pocket People." The Spanish name for this mountain range is the Chiricahua Mountains. At first the name Chiricahua was applied only to the Indians ranging in the vicinity of these mountains. When hostilities began, however, and the three bands were considered a common enemy, the name was used indiscriminately of all the hostiles. The name is now so well known and established that it has been thought best to retain it for the entire tribe.

The third and southernmost band of the Chiricahua was called "Enemy People." They stayed almost entirely in what is now Old Mexico; their territory embraced parts of northern Sonora and Chihuahua. Geronimo, whose name figures so largely in the accounts of the Indian wars of the Southwest, was born a member of this band.

It must not be thought that all the members of one band lived together or in close proximity. These bands were further divided into smaller units. Each, under the guidance of a man of some importance, chose as its base some natural fortification or landmark, was known by the name of that place, and, therefore, can be spoken of as a local group. Thus a group of Apaches of the *tcihene* or Warm Springs band consistently camped near a mountain called "Nokane Mountain." This group became known as the "Nokane Mountain People."

The nucleus of the local group was a body of relatives, the relatives of the leader. Friends who had faith in the leader's sagacity might also attach themselves to his following, new male members entered through marriage with women of the group, and in last analysis membership in the local group was determined by residence. Despite their importance, these local groups were fluid and unstable bodies. Loss of faith in the leader, death of a leader at a time when no other member could command the respect of the following, misfortune or widespread illness during residence at the favorite site, could all prove instrumental in the breaking up of the local group and the scattering of its membership.

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619 621 101 From the point of view of the native the band was more important than the tribe. This is reflected in nomenclature. Neither the Chiricahua nor Mescalero have true native tribal names, but the bands are named. This undoubtedly derives from the fact that in aboriginal times, due to the scattered condition of the tribe and the large area which it controlled, an Apache's meaningful contacts were likely to be limited to members of his band. There were few occasions when tribal unity could be affirmed by a gathering of all tribesmen.

184 ## CULTURAL DIFFERENCES BETWEEN THE MESCALERO AND CHIRICAHUA

Besides the linguistic differences between the Mescalero and Chiricahua, and the relatively minor tribal distinctions in songs, rites, myths, and folk beliefs which might be expected, the most noticeable tribal variations existed in the realm of material culture. The Mescalero made trips to the plains to hunt buffalo, and were to some degree dependent upon this animal for meat, skins, and sinew. The Chiricahua were too far west to benefit to any great extent by the presence of buffalo on the plains. When living or hunting on the plains the Mescalero made use of the skin-covered tipi and transported the poles for it by horse in the form of a travois. But only the Warm Springs, the most eastern band of the Chiricahua, made any use of the tipi or travois, and then infrequently. The Mescalero shaped rawhide parfleches and painted them with Plains-like geometric designs. The parfleches of the Chiricahua were undecorated.

[224] [342] [492] [415] [531]

291 184 An orientation towards the Plains can be discerned in Mescalero dress and hairdress, too. The typical costume of the Mescalero man was buckskin shirt, loin-cloth, leggings, and hard-soled, low-cut moccasins. His hair was braided and wrapped. The Chiricahua man presented a markedly different appearance. He wore no leggings, his moccasins came high on his legs and showed a curious, disc-shaped, upward projection at the toe. His hair hung loosely or was kept in place by a headband only.

[177] [302] [302]

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Not uncommonly the Mescalero women, too, wore leggings and braided (but did not wrap) her hair. The Chiricahua woman wore no leggings. Her hair was gathered at the back of the head, tied there, and covered with a decorated form of hour-glass shape. The Mescalero plucked the eyebrows, a practice which the Chiricahua never followed. 184 302 [291]

The tendency of the Mescalero to draw inspiration from the Plains is observable in many other aspects of the culture, particularly in the war complex. The round, rawhide shield was of more frequent occurrence among the Mescalero than among the Chiricahua. The Mescalero always made a designed buckskin cover for the shield, whereas the Chiricahua shield lacked a buckskin cover more often than not, the decoration being painted directly upon the rawhide. The trailing feather headdress is associated with Mescalero war practices but it is not to be found for the Chiricahua. The same differentiation may be observed for scalping. While the Mescalero warrior was by no means as interested in scalping as his Plains counterpart, he had distinctly more feeling for the practice than did the Chiricahua. Upon the return of a successful war party, it was an integral part of the celebration for the Mescalero fighters to relate the character of their exploits and for their fellow warriors to bear witness to their bravery and veracity. This usage was unknown to Chiricahua warfare. 177 184 714 177 184 727

It seems patent that the essential divergences between Chiricahua and Mescalero cultures can be defined in terms of the eastern position of the latter which made possible contact and association with the buffalo-hunting tribes of the southern plains. Even in matters ceremonial this criterion proves sound. The sole major variation between Mescalero and Chiricahua ritual life is that the Mescalero carried on peyote ceremonies and the Chiricahua did not. Since the greatest development of the peyote cults occurred among the Plains tribes and their immediate neighbors, this tribal difference can likewise be laid to geographical position. 177 184 177 184 796 276

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GEOGRAPHICAL SETTING

101 [484] These Apache were a highly mobile group and their geographical background is, therefore, not so well understood as is that of sedentary tribes. Also in the early days of Spanish penetration they were known by various names and confused with other groups. In view of these circumstances it is impracticable to try to fully describe their geographical setting; hence, only a few examples of this aspect of their environment will be presented.

133 137 The territory through which they ranged constituted a rich variety topographically and climatically, ranging from the flat lowlands of the Southwest, such as the Tularosa Basin, where sagebrush *(Artemisia filifolia)*, creosote bush, Mormon tea, cacti, yuccas, and mesquite comprise the characteristic vegetation; through the low hills where mescal and sotol abound; the foothills of the mountains where one-seeded juniper, piñon, and three-leaved sumac grow in abundance; to the higher elevations covered by growths of western yellow pine, spruce, and aspen. The mild, sunny winters and devastatingly hot summers of the lowlands contrasted greatly with the severe, snow-ridden winters of the mountains, although the mountains were cool and invigorating during other seasons of the year. The fauna varied with the elevation, too. In the flats were the prairie dogs, rabbits, and antelope; in the mountains, deer, elk, and mountain sheep.

132 133 136 133

221 [182] [222] Of all this variety the Apache was the master. He moved with the seasonal change of weather, and followed the wild food harvests as they occurred. His adaptation and response to the ecological region in which he lived was sensitive and complete. When the colder weather came he removed to a lower altitude; in summer he was in the highlands again. When the mesquite and screwbean ripened on the flats, parties of Apache were there to gather them; when the hawthorn hips were ready in the highlands, Apache were nearby to take them. These people knew nature's calendar by heart, and no matter whether a grass seed ripened or a

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certain animal's fur or flesh was at its best at the particular time, the Apache was present to share in the harvest. 221

In former times the country of the Apache was a difficult one for the uninitiated to cross. The lowlands were hot and dry and made thorny traveling. A glimpse of water turned out more often to be a mirage. Wide arroyos and washes, cut by the torrential flows which often follow the sudden rains of the surrounding mountains, barred the passage. The tangled brush of the foothills made progress slow, and the high ranges were a formidable barrier to one who was not acquainted with the passes and short cuts. 133 484

The Apache made perfect familiarity with this region in all its aspects an ally to his safety. He knew the water holes of the flats. He knew the travel distance from point to point and, therefore, how much food and water to carry. He was aware of the shortest passes and best hiding places in the mountains. If cut off from his own group, he knew where he was likely to find other parties of Apache camping, and he was trained to endure hardship and to shift for himself in this environment until he could make contact with friends. 133 484 182 823

But, though the Apache helped themselves freely to the plant and animal life of the lowlands, it must not be thought that they felt equally at home in both the plains and the mountains. After all, they were essentially mountain people. In the lowlands they had serious competitors, such as the Plains Indians, whom they acknowledged to be their equals and even their masters in knowledge of such country and its resources. But in the mountains they felt confident and secure. Here they had their retreats and their cave caches of food supply laid up against need and emergency. Army officers have commented often enough upon the difficulty of finding and besting the Apache in their mountain stations. 484 182 823 [186] [251] [648]

For the original habitat of the Mescalero, portions of southern New Mexico may be taken as an example. The west side of the great plains of New Mexico, Texas, and Mexico is a region consisting of isolated mountain ranges and intervening plains or broad, open valleys. Several of these val- 133

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133 leys are traversed by the Pecos and Rio Grande rivers and in the region between these rivers are other valleys entirely enclosed by higher ground with, therefore, no draining outlets. The Tularosa Basin is one such enclosed area *(14:*11). It has a maximum length of about 150 miles and a maximum width of about sixty miles. The interior of the basin contains an extensive area of alkali flats and white gypsum sands about four thousand feet above sea level, to the south of which lies a large sandy desert with slight relief and lack of definite drainage. The northern half of the basin includes, between the mountain borders, a plain that descends gradually from the Mesa Jumanes, six thousand to seven thousand feet above sea level, to the alkali flats, but is broken by many hills, buttes, and ridges, and by a ribbon of extremely rough lava that extends along its central axis for more than forty miles (*14:*12). The altitude of the Mescalero Indian Reservation Agency is 6,627 feet *(7:*7.).

132 The climate of the basin is typical of the arid Southwest,
133 marked usually by a clear sky, dry rare atmosphere, warm days and cool nights, both in summer and winter. The aver-
[137] age annual rainfall of the lowland plains is about ten inches and thus supports a vegetation of characteristic desert appearance. The high mountains at the borders of the basin receive more precipitation, are covered with forests, and give rise to several small streams which flow into the basin. Owing chiefly to fluctuations in altitude the basin has a wide range of temperature.

133 As has already been mentioned, the favorite haunts of
[131] the Mescalero were in the San Andreas, Sacramento, and Guadalupe mountains. The San Andreas extend in a general north-south direction, and for a distance of eighty miles comprise the west wall of the Tularosa Basin, reaching a height of 9,040 feet in Salinas Peak. The range is remarkably continuous and unbroken, having only two principal notches and terminating at the south with San Agustin Peak, which is less than seven thousand feet above sea level *(14:*30).

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The Sacramento Mountains, lying east of the southern part of the Tularosa Basin, form about fifty miles of its mountain wall and consist essentially of a great plateau rising in places to a height of more than nine thousand feet, descending gently eastward toward the Pecos Valley. On the west, however, it breaks off abruptly. The canyons are steep and short. Because the crest of the mountain is near the west side of the range, most of the drainage is eastward toward the Pecos River; only a narrow belt of the area sends its waters toward the west (*14*:26). 133

The dominant vegetation of these first two mountain ranges, utilized by the Mescalero Apache, is piñon pine, one-seeded juniper, and western yellow pine. In the third range mentioned, the Guadalupe Mountains, are to be found the important mescal and sotol in abundance. On Meinzer and Hare's (*14*:194) map showing zones of native vegetation, in a portion of the Tularosa Basin, mesquite is a dominant plant, and it will be seen later that both the mesquite and yucca of this basin constituted important sources of food for these Indians. 137 [262]

Sulphur Spring Valley, together with the rest of that part of Arizona which lies south of the Gila, was purchased from Mexico in 1853 and until about 1873 was occupied exclusively by the Chiricahua Apache. The trough occupied by Sulphur Spring and Arivaipa Valleys is bordered by two parallel mountain chains which extend from the Gila River to Mexico. Included in the east chain are the Chiricahua Mountains, the largest in the region, which formerly constituted a favorite dwelling place of the Chiricahua Apache. In fact, the name Chiricahua was at first applied only to the Indians ranging in the vicinity of these mountains. These mountains extend southward from Apache Pass about thirty miles to the head of the San Bernadino drainage, twenty miles north of the Mexican boundary. The range is massive and in the northern portion rugged, although to the south, where it is wider and more massive, the crest line is remarkably even and a considerable portion of it more than nine thousand feet above sea 131 133 [101] 133

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133 level. Numerous canyons cut both sides of the range, and, during the rainy season, many small streams flow a short distance into the valley *(15:*22;*9:*4).

137 Sulphur Spring Valley and adjacent mountains show
[132] marked variation in annual precipitation averaging, for the Chiricahua Mountains, more than twenty inches *(15:*78-83). Meinzer's *(15:*182-84) description of the native vegetation of Sulphur Spring Valley drainage basin shows western yellow pine as the dominant vegetation on the higher levels of the Chiricahua Mountains. On the foothills and lower ranges junipers and oaks are common, and in ribbons of timber which stretch along the stream courses, oaks and sycamores are the characteristic vegetation. The higher parts of the valley adjacent to the mountains support what he terms upland grass and brush zone, extending over three-fourths of the valley. Most of it is covered with a light growth of various grasses, but in the central and southern parts of the valley it includes extensive tracts of shrubs, especially creosote *(Covillea glutinosa)*, as well as groves of Yucca. Lying on the middle and lower parts of the stream-built slopes is a zone of mesquite covering about one-sixth of the valley surface and also extending as scattered tracts on the upper slopes. A small portion of the valley area is covered with sagebrush *(Artemisia filifolia)*. Low tracts, partly enclosed by the mesquite areas, support a zone of alkali vegetation—shadscale *(Atriplex canescens)*, *Suaeda suffrutescens*, alkali sacaton or bunchgrass *(Sporobolus airoides)*, and Mexican salt grass *(Eragrostis obtusiflora)*. Finally, in the lowest part of the flat in the north basin is an area of about fifty square miles practically destitute of vegetation.

433 RELATION TO NATURAL SURROUNDINGS
182 It is especially important to understand the Apache's relation to his natural surroundings because his economy proceeded almost entirely on a hunting and gathering level. There was a late introduction of agriculture which will be

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There was a late introduction of agriculture which will be described presently, but its influence always remained slight. The Apache's efforts were not directed toward improving upon nature's offerings, but rather upon utilizing the largest number of natural goods, and using each one to the best advantage.

The utilization of plants for food, drinks, and narcotics was but one facet of this process, of course. In succeeding bulletins we expect to give some indication of the degree to which wild plants were used for medicines and for the making of tools, weapons, and artifacts in general. Every tree and bush had been tested for its qualities in all cultural contexts. Any Chiricahua or Mescalero above middle age will tell you that mulberry wood made the finest bow and that locust runs it a close second for this purpose. The wood of the chokecherry bush was the universal favorite among these Apache for arrows. Oak was considered the most durable for the outer rim of the cradle-board. The Apache took pride in matching his materials to the purpose at hand.

But to appreciate the total round of Apache life and thinking, and to comprehend the significance of many features of the culture, our understanding of the Apache's relation to his natural surroundings must penetrate even further. That relation does not halt with a minute scrutiny of the environment and the practical applications which flow therefrom. It involves the Apache's world conception and his total relationship to nature.

The Apache, however arrogant may have been his relations with his fellowmen, was entirely cognizant of his abjectness and dependence before natural forces. He relied upon nature's bounty and suffered when drought or inclement weather curtailed it. He never lacked for vigorous enemies. He was ever a prey to frightening sicknesses. In the battle of wits between him and the wild game he stalked he was many times out-distanced. Whatever hazards he surmounted, there were always old age and death to strike him down at last. In the words of his own prayers, before the forces of nature he was "a poor fellow," and "a pitiable object."

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181 In comparison to himself many natural forces seemed
182 unaccountably potent. Cyclones uprooted trees and left him
82 terror-stricken. The lightning struck and devastated. The sun shone strongly and the plants everywhere renewed life. The Apache saw himself at the mercy of all these forces. He recognized, moreover, how little he could accomplish by himself without the aid of the plants and animals which surrounded him. If the choke-cherry bush did not yield wood for arrows he was defenseless and unable to hunt. If the deer could not be found he lacked clothing and meat.

181 In addition, the traits he shared with other animals
182 did not pass unnoticed for the Apache. He watched many of
825 them prey on others as he was forced to do. He saw them seek food and shelter and fiercely protect their young. That comfortable gap which we have left between ourselves and all other life on the planet, the Apache bridged in a stride.

773 Apache mythology harkens back to a time when all
824 creatures and objects could speak and move and showed
825 human attributes. Later, everything was given its "way"
182 and was differentiated from the human. But the qualities and capacities which these creatures and objects exercised in the mythological period, persist in them today in latent form. In the eyes of the Apache the natural world is potentially alive and aware of his problems. Trees, plants, animals, and insects do not ordinarily speak and assume human form, but if an Apache's need is extreme and he is worthy, any one of these may take pity on him and approach him thus to give him the requisite warning and advice.

182 Therefore the Apache, whether he is praying, or hunt-
824 ing, or acting the craftsman, is not dealing with dumb ani-
825 mals and inanimate plants as the white man would have it, but is concerned with natural objects which know well his intentions, how to thwart the impious and to reward the deserving. These animals and plants are thought to be willing to help the Apache and give of their seeds, fruit, hide, or meat—providing they are approached in the correct manner, with proper attention to rules and ritual which have existed from the time "the earth was new."

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The native ideology concerning plants illustrates this conception of the objects of the natural world and the care taken to handle them properly. A plant with smaller ones of the same kind surrounding it is called "a mother and her children." A dried tree is known as "an old lady with grey hair." Some plants are "brother" or "sister" to others. Sotol is considered a male, the "brother" of *Yucca glauca*, the female element of this particular combination. Therefore the transverse pieces at the back of the cradle-board must be made of sotol stalk when the child for whom the cradle is designed is a male, and of yucca when it is being prepared for a baby girl. Likewise is this distinction kept in mind when the fire-drill is fashioned, the hearth being then of the yucca and the drill of sotol. Whenever an Apache digs up a root to be used for medicinal or ceremonial purposes, he always prays and puts the top of the plant back in the hole.

Life and conscious aims are attributed to natural forces as well. The Apache conception of thunder will serve as an example. Thunder is thought of as people and thunderclaps are the voices and shouting of these people. Lightning is the arrow of the thunder people and these arrows reach the earth as the elongated flints which the Apache find throughout their territory. At one time the thunder people hunted for the Apache and slew deer for them with these arrows. But those days are past and now the arrows of the thunder people are reserved for any who act disrespectfully to the thunder people or otherwise disobey the injunctions of Apache life. When the lightning flashes, the Apache says, "Let it be well, my brother Lightning," or "Strike high, my brother." When the lightning hits close the relationship is altered to make the prayer more appealing and the Apache says:

> Continue in a good way.
> Be kind as you go through;
> Do not frighten these poor people;
> My grandfather, let it be well;
> Don't frighten us poor people.

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821 784 776 Space does not permit a full discussion of the restrictions in food, speech, and even in the color of objects displayed during a storm, which are obeyed in order to appease the thunder people. But enough has been given, perhaps, to demonstrate that the Apache conceive of this natural force as alive and personified.

825 The same characterization attaches to insects and animals. To kill a spider will bring retaliation by his fellows. Therefore it is customary when an Apache has inadvertently stepped on a spider for him to say, "So-and-So killed you," [648] naming someone he especially dislikes. During the wars with the United States soldiers a favorite remark was, "Washington did it," when such a mishap occurred. The [753] malice of a mistreated horse or dog was said to result in serious consequences, and the ants were said to afflict anyone with bladder stones who urinated in or near their hills.

825 224 The extent to which it was thought necessary to go in order to win the approval and co-operation of the animal world is clearly indicated in hunting practices. The customs pertaining to the hunting of deer will serve as an example. [824] The deer are said to be sensitive to certain plants, such as wild onions and osha, and will hide from a hunter who digs them up or eats them immediately before the hunt. To eat 825 224 784 [264] before leaving for the hunt would be to forfeit any chance of success; even if there is an abundance of food at hand, the hunter must go out hungry, for the deer are not likely to take pity on a full stomach and reveal themselves. When the kill is made, the head must be turned to the east, and, in butchering, the carcass may never be straddled, nor may the hunter walk on the east side past the head. The lower end of the big intestine must be left for Raven. The eyes must be kept from Raven till the meat is brought in, otherwise, the game would not be fit for consumption. If a hunter should [787] be unable to find or kill deer for some time, he would assume that he had been careless in one of these or similar particulars and would go to a man who has a ceremony from deer in order to learn what he had done "against" the deer and how to correct matters.

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MATERIAL CULTURE

181 It will be understood that a people who lived by hunting and gathering, whose contacts with nature were so close and exacting, and whose food quest demanded much movement, could not develop a very elaborate material culture. The 342 characteristic dwelling of these Apache tribes was a dome-shaped structure covered with grass thatching, hides, or bark. Household utensils included a pitch-covered woven 415 water jar, coiled basket trays, and large burden baskets of twine work. There were dippers and spoons of split gourds, [412] and ladles of split mountain-sheep horn. Metates and 412 manos were found in the surrounding country and brought [172] to camp, or crude ones were fashioned by the Apache themselves. For household purposes the Apache made rock pounders and stone axes hafted to wooden handles. Occa- 323 sionally an Apache woman made a few clay pots, but because of the breakage of this ware that attended the roving life, it was found to be an unprofitable procedure. On the march 415 these people carried water containers made from the stom- 484 achs or intestines of animals. 237

There was a distaff-type twisting tool which wound 283 together buffalo or horse hair into rope. Ropes of twisted 237 rawhide were also widely used. Long strips of yucca and 824 mescal leaves were used for binding material. Sinew from the loin and leg of the larger game animals was shredded for thread. Women had a special rawhide rope for wood- [482] carrying and some had a special conveyor of wood and rawhide for this purpose.

The lower leg bone of the deer was ground down to 237 make a drill. Later the iron-tipped arrow was used as a 412 boring tool.

In connection with the horse complex, the men made 492 their own whips, saddles, stirrups, cinches, bridles, saddle [232] bags, and even made rawhide bags which were tied over the hoofs to prevent or cure lameness of horses.

For purposes of grooming, combs of mountain mahog- 412 any *(Cercocarpus montanus)* and brushes of folded and 824 pounded mescal or sotol leaves were made.

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534 For musical instruments these Apache used the drum, the animal-hoof rattle, the musical bow, the flageolet, and a curious one-stringed fiddle made from the flowering stalk [276] of sotol which may be of Spanish origin. In their peyote rite [796] the Mescaleros accompanied their songs with the gourd rattle.

411 In addition to the shield and the bow and arrow, which have already been mentioned, the Mescalero and Chiricahua fought with spears, slings, flint knives, and war clubs of a number of types. Quivers, bow covers, and wrist-guards were other material items belonging to the war complex.

433 That these people made cradle-boards, fire drills, par-fleches, skin tipis, and cloths and blankets of buckskin and animal hides has already been indicated. Water transporta-501 tion was solved by the construction of a crude bull-boat or raft-like structure.

SOCIAL ORGANIZATION

596 The tribe, band, and local group have already been described. The remaining social segment is the extended domestic family, which acted as the basic economic unit. Such an extended family would be housed in a cluster of individual dwellings and would ideally consist in an older married couple, their unmarried children, their married daughters, [591] the sons-in-law, and the issue of these. As can be inferred from this, residence was matrilocal. All the cooking [252] for the members of this family group was carried on at one place by the mother and her daughters, and the latter sub-[606] sequently took portions of the prepared food to their husbands and children, for a mother-in-law—son-in-law avoidance [476] was in effect. Whenever there was work to be done which involved the labor of more than one person, the men or women of this extended family, according to the nature of the task, assisted each other in its execution.

584 Marriage was arranged between the older kin of the man and woman involved, usually at the instigation of the young man, who, with the approval of his own relatives,

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would ask a kinsman to act as intermediary for him in seeking the girl's hand. This "go-between" would visit the girl's parents' encampment, offer presents, and seek to make the necessary arrangements. If the girl's relatives approved the offer, the girl and her mother erected a dwelling in the vicinity of the parental home, and the union was recognized as soon as the boy took up residence with his new wife. Sororal polygyny was permitted, and the young man, if he proved a successful hunter and good provider, was encouraged to marry the younger sisters of his wife as they matured. Both the sororate and the levirate were practiced. A man could be forced to marry a sister or female cousin of his dead wife, and the woman could not refuse her dead husband's brother or male cousin if he wished to marry her. At marriage the Apache man was obliged to observe an unusually large number of avoidances and special forms of speech in respect to his affinities. Among others, the Mescalero man avoids his mother-in-law, her mother, her mother's sisters, and her sisters. In addition to avoiding his wife's female relatives, the Chiricahua man is called upon to avoid his father-in-law and may be requested to avoid other of his wife's male relatives. More distant relatives of the wife might request a special form of address known as "polite form" instead of avoidance. Where a choice is possible and avoidance is requested of a man by the affinity, it signifies great love for the girl through whom the relationship has been established and approval of the match.

The Apache man who enters the extended family through marriage is expected to work unremittingly for his in-laws. All the game that he kills in the hunt is brought to his wife who carries it to her mother's home for utilization and distribution. Whatever parents-in-law command or suggest, a son-in-law is expected to perform.[8]

8. For the details of the Mescalero and Chiricahua kinship systems see Opler (31).

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CEREMONIAL LIFE

771 The ceremonial life of the Chiricahua and Mescalero Apache reflects that close relation to the immediate natural surroundings which we have already noted. It is thought [778] that supernatural power pervades the world and that if the individual can so arrange matters that some of it is available to guide, warn, and advise him, he will elude many dangers and enjoy many advantages. It is characteristic 778 of his thinking that the Apache should conceive of this force 787 as reaching him through the instrumentality of the objects with which he is most familiar. In former days almost every Apache of these two tribes could be expected to have supernatural experiences in which animals, plants, or natural forces offered him ceremonies. Though the sources through which power was obtained were various, the manner and details of the encounter were quite stylized. Most often the donor of the ceremony appeared first in its own guise and then changed to the form of an Apache man. He led the recipient to a "holy home," usually within some cave or mountain, where the Apache was tested and initiated into the rite he was henceforth to use. There he learned the songs and prayers, received instructions concerning the purposes for which the ceremony was to be efficacious, and was told the ceremonial gifts which he must demand before agreeing to perform his ceremony.

The key to Chiricahua and Mescalero religious life is this personal relationship and rapport which is established between the Apache man or woman and one or more sources of supernatural power. When an Apache has had such an encounter he feels that he has "something to live by," something with which, by means of his prayers and his songs, he can always communicate, and of which he can ask guidance and advice. Some Apache use their "power" on this personal and practical level only, as little more than a monitor 755 or "guardian spirit." But the chief function of such cere- 778 monies is curative. Through his songs and prayers the Apache reaches the ear of his power, and pleads that a sick

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person be cured. The power is expected to "speak" to the Apache through which it "works," to reveal the cause of the illness, and to give directions which will lead to recovery. If the singer's power sees that the case is hopeless, this is made plain to the shaman; if the power is not "strong" enough to cure the patient, but the power of another has the required potency, this is related.

No Apache, though he has much supernatural power, is obliged to use it to cure others. Many individuals confine their ritual practices to the requirements of their immediate families. Other individuals make no secret of the merits of their rites, court requests for their services, and become well known for the cures with which they are credited. These people have become known as the "medicine-men of the Apache" and their activities have given rise to the erroneous impression that they alone control the ceremonial life of these tribes.

When an Apache shaman is asked to conduct his rite, a cross of pollen must be traced on his moccassins or a cigarette must be laid on his foot by the suppliant. Before he can begin, ceremonial gifts, usually four in number, must be tendered him. What these are to be has been explained to the shaman when he obtained his power, and usually include such objects as abalone shell (if a woman is to be cured), turquoise (if the patient is a man), downy eagle feathers, unblemished buckskin, and the like. These are considered payment to the power and not to the shaman. After the ceremony is concluded the shaman receives as his fee a horse, a robe, a quantity of food, or something equally practical.

The ordinary pattern is for the rite to be conducted for two or four nights in a structure which faces the east. The shaman first smokes a cigarette of native tobacco, puffing the smoke to the cardinal directions in clockwise order. He marks the face and body of his patient with pollen (usually from the cat-tail, though this varies with different ceremonies) and is marked by the patient in turn. After a set of prayers he begins his songs. At the end of the second or

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755 fourth verse of the songs, or at the end of the second or fourth song, he looks for some sign or word from his power which will guide him in the further steps to be taken. If sorcery has caused the complaint, the object shot into the victim by the sorcerer may have to be sucked out, either through a tube or with the lips. A concoction of herbs as medicine may be prescribed. Food and behavior taboos may be imposed on the patient. Various plants may be burned that the patient may inhale the smoke. Parts of animals and ceremonial objects may be rubbed on the sufferer's body.

[757] [784]

755 82 Red ochre, white clay, and specular iron ore figure prominently in Apache ceremonials in addition to the ritual objects already mentioned. Snakeweed *(Gutierrezia* sp.), grama grass *(Bouteloua* sp.) and sage *(Artemisia* sp.) are plants much used in ceremonial contexts. The source from which curative power comes is nearly always represented in the rite by some body part. If that source is animal, its hide or some part of it will be in evidence. If it is a bird, the tail feather will, in all likelihood, be found among the ceremonial paraphernalia manipulated.

778 787 789 Though curing occupies the central place in Apache ceremonialism, power can be approached with other ends in view, and its aid obtained for locating the enemy, finding lost objects, helping in the hunt, for learning the probable outcome of a given course of action, and for the solving of many other problems.

852 There were ceremonies, too, which were performed over the growing child at specific times to insure for him long life and good health. A ceremony was held when the child was put into the cradle; another when he was about to walk. About a year later, in the spring, a rite was performed in which the hair was cut, that it might afterwards grow out full and thick.

881 The only Apache ceremony which deviated from the shamanistic principle and which did not depend for its success upon the personal relation between a shaman and his power, was the girl's puberty rite. This was a rite which in theory had been taught to the Apache by the culture hero

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and his divine mother, and its execution was, therefore, a matter of learning by rote the directions which these two laid down.[4]

HUNTING

Something has already been said about the hunt in connection with our discussion of the Apache's relation to his natural surroundings. Apache hunting customs are so interlarded with belief and ritual observances that only the briefest outline can be suggested here.

When the Apache boy is still very young, a close male relative provides him with a small bow and blunt arrows. With these the boy practices, trying to shoot birds and small mammals. When he succeeds in making his first kill, he marks its heart with a cross of pollen and swallows it raw and whole. At about the age of puberty he hunts in the company of an older and more experienced man for larger game. When he kills his first deer, antelope, or elk, his companion marks the boy's moccasins or face with blood from the heart of the animal.

The Apache ate the flesh of deer, antelope, elk, mountain sheep, cotton-tail rabbits, opossum, and wood rats. The buffalo was hunted by the Mescalero, as we have noted. Many would not touch jack-rabbit flesh. Some ate mountain-lion flesh and peccary, but many would not taste peccary, and mountain-lion was eaten by most in a ceremonial context only. Bear was eaten only by those who had a ceremony from the bear or by those who were consuming it ritually. Some ate squirrel flesh, and some would not taste it. The same was true for the prairie-dog and ringtail cat *(Bassariscus astutus flavus)*. Birds were not in high favor as food. As far back as can be remembered many Apache would not eat turkey, quail, and dove. Fish was another food upon which the Apache were not of one opinion. The members of at least one Chiricahua band did not eat fish before White contact. It is claimed, on the other hand, that

4. For a more complete discussion of the Apache conception of supernatural power see Opler (18).

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262 some Mescalero and some Chiricahua did partake of fish.
[179] After White contact, horses, mules, and wild steer were added to the diet.

[825] There were many animals, such as the mink, beaver,
[224] muskrat, and weasel, which were not used as food but which were sought for their skins or because their body parts were
223 of ceremonial import. Birds such as the eagle, turkey, and turkey buzzard were shot or snared for their feathers or body parts.

224 Head masks were used in stalking deer and antelopes, and head nooses were occasionally strung in the trails for deer. Antelopes were run to exhaustion by relays of men
[223] mounted on fast horses. Oval bird blinds were built at water holes, and from them the hiding hunter would shoot the birds he wanted as they came for water. Eagles and turkey vultures were taken in snares set around the carcass of some dead animal. Occasionally a rabbit surround was held, in which old and young participated and shot or clubbed the prey. The ordinary manner in which a man hunted for larger game, however, was to go out by himself or with a companion, depending upon his knowledge of the habits of the game to lead him to the place where an animal might be browsing, and from there to track it, approach it without being discovered, and dispatch it with a well directed arrow or two.

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576 Every aspect of the hunt is governed by rule for the Apache. If he shoots a deer and another man is with him at the time or comes up at that moment, etiquette decrees that he step aside and allow his companion to help himself. The newcomer is entitled to the hide and as much of the meat as he desires. Ordinarily he takes the hide and half of the flesh. If two hunters come upon a third who has just made a kill, they race for the carcass, and the one who touches it
[526] first is entitled to the hide. Should both touch the kill at the same time, the issue is decided by a wrestling match between them.

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736 The successful Apache hunter must not turn away the widow or the needy woman empty-handed when he returns

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through the camps. Any woman who has no one to provide for her may approach him at this time and help herself to what he has without protest from him. Often, in times of scarcity, an Apache hunter would reach his own dwelling with little to show for his efforts.

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AGRICULTURE

It is doubtful whether the Apache practiced what could really be called agriculture until very recently. As a matter of fact they raised so little maize and expended so little care upon it that the practice, in aboriginal times, did not interfere with their nomadic life. They obtained maize from the Pueblos and the Mexicans, planted some in sheltered canyons, returned once or twice to pull the worst of the weeds, even did a little irrigating if the land were exceptionally dry and water could be easily diverted to it, and then came back when they thought the crop would be ready to harvest.

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One of the oldest of the Chiricahua told the writer, "My people did not practice farming. The Indians had many plants which were given to them and did not have to practice it. They move around so much too." Another Chiricahua man testified, "I do not think the Chiricahua ever planted before they came under the influence of the Whites." Still another member of the tribe spoke of planting as a trait that had been "picked up" long ago in Mexico. Most of the informants seem to realize that what agriculture they practiced came to them from the outside, and many of those who state that it was carried on in the "old days" interpret that to mean no more than the lifetime of their parents or grandparents.

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Just when these Apache began to plant is difficult to estimate. At any rate it is certain that the agricultural efforts of the Apache were at first far from elaborate. They have been described by an old Mescalero as follows: "Only two or three families out of a hundred would farm. That's in the earliest time I can remember. We got the corn seed from raiding settlers and Mexicans. This was before gov-

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243 [648] [177] [412] ernment control. In those days the settlers planted corn far from the houses. It was easy to get, and we got it from the south (Mexico) mostly. We had just a digging stick—no hoe. With this we made holes and planted the corn shallowly, about four or five seeds to one hole. Pulling the weeds was about all the care we gave it. We might be traveling around but we came back to it at the time we knew it would be ready to harvest. My people used no irrigation then. This went on before my time, when my father was a boy too, and before his father's time. The Mescalero planted around Tularosa, New Mexico, and La Luz at that time."

The same informant told how wheat seed, obtained from Mexico during raids or from the early settlers, was planted in sandy loam, harvested by beating it with a stick, and made into bread.

241 177 Later, in the early 1870's, when the Warm Springs Apache were given a separate reservation near Hot Springs, they turned more to agriculture and considerably refined these haphazard methods. Under the influence of neighboring Mexican towns with which they carried on trade, they began to use hoes shaped out of the bent root of a tree, and later obtained hoes of Mexican manufacture. Watermelons and cantaloupes were raised as well as corn, and later beans, pumpkins, potatoes, chile, and squash. Irrigation was now regularly adopted, trenches being dug from the water supply to the field, and stopped up with earth when the land was sufficiently watered. Maize kernels and beans, to be used for seed, were sometimes soaked all night in water to make them sprout faster and then dropped two or three in a hole. Pumpkin and watermelon seeds were often soaked like this before planting too. When the seeds were soaked beforehand they were not planted so deeply as when they were planted dry.

[439] [412]

241 [462] Agriculture never became important enough for the Apache to consider it one of the manly arts. Both sexes took part in the task of planting, but the weeding, harvesting, and preparation were left almost entirely to the women. Agriculture has never exerted influence enough to figure

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Agriculture has never exerted influence enough to figure in Chiricahua or Mescalero Apache ritual, belief or myth except in one instance, where there is an association between the growing crop and the cricket. Crickets are placed around the field and prayers are addressed to them to help the crops grow. The Mescalero put a live cricket with the seed to be planted and take care not to kill a cricket lest their crops be reduced. 241 825 [796] [773]

Informants reported that their maize was blue and red mixed and that they never had either pure yellow or pure blue varieties. Samples of maize grown at present on the Mescalero reservation are mixed blue and white. Also in an old parfleche purchased from a Mescalero Indian were found dried maize kernels which were represented by informants as the type grown formerly by the Mescalero. Mr. Volney Jones, of the Ethnobiological Laboratory of the University of Michigan, reporting by correspondence upon these grains said: "It is of a type which is grown by some of the Pueblo Indians but is very much smaller. The type is intermediate between flint and dent, having the flinty or hard consistency of flint corn but the grain shape of dent corn with only a slight tendency to dent." 243 137

Maize was usually cooked like mescal, in an underground oven, by the Mescalero. Wood was first burned to hot ashes in the pit, then the whole ears were sprinkled with water and thrown in. They were next covered with grass and dirt and cooked over night, after which they were removed and stored, husk and all, and did not mould. When desired for a meal the ears were boiled and were said to taste like fresh maize. 252 [251]

Another method of preparation was to roast the ears as described above, cut off the grains, and dry them, and store them in sacks until ready for use. The Chiricahua informants claimed that they did not roast maize in underground ovens although they saw the Navahos do it. [251]

Maize was also dried on the cob. All except two husks were removed. Then it was dried in the sun by tying these two husks together and hanging the ears up on strings or on trees. 251

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BOY TRAINING, RAIDING, AND WAR

883 868 147 526 Shortly after the Apache boy reached the age of puberty, his relatives took measures to strengthen and harden him. They insisted that he rise very early in the morning and perform certain duties, such as driving the horses to or from pastures. An older male relative undertook the task of training him at this period. He might order the boy to test his strength against a young tree and pull it up by the roots, or to lift and throw a heavy stone. The boy was made to run long distances up hill with a load on his back and when he returned had to spit out water which he had been given to hold in his mouth at the start of the run. Often he had to race in this manner in competition with other boys of his age, and the one who lagged behind felt the switch of some older man who accompanied the youths. Sometimes these boys chose sides and opposed each other in strenuous mock battles in which blunt arrows and light lances were the weapons used. Foot races, bareback horse riding, and wrestling matches were part of a program as arduous as the boy's elders could devise. In winter the boy had to roll in the snow, and when the ice formed on the lakes, he was taken early one morning and tossed into the water. Often he was made to keep awake the entire night or for an even longer period, in order to prove that he could stand guard over the camps with the men when danger threatened.

702 868 883 Later on, when the youth was about sixteen years old, he entered a critical period of training, designed to leave him an accredited warrior. During this period he had to attend four raids or war parties, not as a fighter or participant, but as an apprentice and servant to the older men. Until he had fulfilled his obligations the boy wore a single eagle feather in his hair and had to be careful of all that he said and did. Moral laxity, disobedience, or laziness at this time would fix these undesirable traits in his character for life. On these first four expeditions he took with him a [415] reed drinking tube and a wooden scratcher, for he could not [271] allow water to touch his lips, nor might he scratch his skin [413] with his nails.

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with his nails. He obeyed a number of food and behavior restrictions during these journeys. He spoke in a special "war-path language" that had been taught him, in which all sacred subjects and objects that have to do with the raid and war-path were referred to by other than the ordinary terms. Thus a horse was called "one with nose to the ground," pollen was called, "it renews life," and a mountain in enemy country was called, "one I have not seen before." During these first four expeditions the boy had to obey every order of the warriors. He went for the water, built the fires, cared for the horses, and stood watch over the camp. He was not expected to share any of the fighting or dangers of these first four journeys, but when he went for the fifth time, with his apprenticeship and boyhood behind him, he felt obligated to act with conspicuous bravery.

Apache war dances and victory dances were vigorous representations by the warriors of the battle to come or the conflict from which they had just emerged. A large fire was kindled in the evening at a level place. To the side of it singers squatted before large pieces of rawhide. The singers beat the hide with sticks and began the war songs. They would call the name of the warrior and ask him to show what he would do or had done. With a bound the warrior named would appear before the fire in full battle array, and by flourishing his weapons, dodging dexterously to avoid the enemies' arrows, and engaging in a pantomime of the encounter, he would depict his prowess in war. Then others would be called until all those who were connected with the expedition had a chance to participate.

Women watched the dancing from a little distance and occasionally uttered a high-pitched, keening-like cry which indicated applause, but no woman took part in the dance. During this dance all women had to be addressed as White-Painted Woman, the most prominent character of her sex in Apache mythology and the mother of the culture hero.

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MYTHOLOGY

773 The most important Chiricahua and Mescalero Apache myth, and the one which has the greatest implication for Apache ceremonialism, is that which recounts the birth of the culture hero, Child-of-the-Water (whose mother was White-Painted Woman and whose father was Water) and his subsequent destruction of the monsters which were making the earth uninhabitable for humanity. Many elements of Apache ritual life are rationalized in this account. For [824] instance, because Child-of-the-Water used grama grass as his arrow when he slew an evil giant, grama grass is much used in ceremonial contexts, as we have already observed.

A favorite story cycle is one which deals with the travels and adventures of the trickster, Coyote. Coyote is credited with stealing fire for the people, but in most of the episodes he is portrayed as the buffoon, dupe, and violator of Apache mores.

Other myths are concerned with supernaturals, with the origin of games, with the disappearance and restoration of the game animals, with races and contests between different animals, with the mishaps befalling a race of foolish people called "travelers," and with a variety of motifs too numerous to list here.

GAMES AND SOCIAL DANCES

526 [181] [525] The Apache were anything but a somber people. They enjoyed gambling games and social occasions. The men played a hoop and pole game which was connected with ceremony and which the women were not permitted to watch. Stave games were the favorite recreation of the women. Shinny and a game of ball not so very much unlike American baseball are also described. There were a number of arrow-shooting games, one game in which the the aim was to slide an arrow along the ground so that the feather would touch the feather of the opponent's arrow.

524 A very important game, and one which could be played only at night, involved the hiding of a bone in one of four half-

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buried moccasins by one side, and the guessing of the position of the bone by their opponents. This is the game which it is alleged was played in the beginning of the world by the animals and the birds to determine whether there would be darkness all the time, or whether there would be day as well. In another Apache game the contestants throw rocks toward a hole. The one who gets his rock nearest scores most, and the player who obtains a required count first is the winner. Tug of war, wrestling matches, foot and horse races, and even the making of cat's cradle were numbered among the Apache's amusements and contests.

Social dancing was an integral part of the festivities at any large gathering. Beside the round dance there were two favorite types of partner dance, one in which the men and women, facing each other, first approached each other and then retreated. In the other partner dance, the man and woman faced each other and went forward and backward together. All of these dance forms were accompanied by separate sets of songs, the words of which were quite often caustically humorous and fixed with sharp verbal barbs for the young lovers who were dancing.

DEATH

Like all other Southern Athabaskans, the Chiricahua and Mescalero showed the most acute dread of anything connected with death. The corpse was buried as quickly as possible and the place of burial never revisited. The possessions of the deceased were destroyed, and the family at once abandoned the camp at which death had occurred. The name of the dead person could not be mentioned thereafter. Those who prepared the body for burial burned or discarded the clothes worn on the occasion. Close relatives of the deceased cut their hair as a mark of mourning. The ghosts of Apache who were sorcerers in life turned to owls, and the Chiricahua and Mescalero disliked nothing so much as to hear an owl hoot close by.[5]

5. For details of this concept and its implications, see Opler (20).

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775 These people conceive of an afterworld, "the earth below," a place under ground to which the departed go. It is pictured as a beautiful land of running streams, tall grass, and stately trees, abounding in wild fruits and game of all kinds. Here there is no death, no disease, no sorcery, and the dead Apache pursues the practices and pleasures he enjoyed most when alive.

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PLANTS USED BY THE MESCALERO AND CHIRICAHUA APACHE FOR FOOD, DRINK, AND NARCOTICS

Foods

The stately Agave, a characteristic feature of desert vegetation of southwestern United States, constituted a very important source of vegetal food for these Apache. Several native species were utilized, but the most abundant one in the area was *Agave parryi*, commonly known as mescal or century plant (although these common names apply equally well to several other species). Contrary to popular opinion, the Agave bloom in much less than one hundred years; however, each plant blooms only once, after which the leaves wither and die. Around the dead plants are usually to be seen a number of young plants formed from suckers of the parent plant. It is from the food itself, known as mescal, prepared from *Agave parryi*, that the Mescalero Apache have been given their name *(28:*455).

Although not so extensively as formerly the Apache women still make expeditions to regions where Agave grows in abundance for the purpose of collecting the edible portions of the plant. These visits are usually made in late May or early June when the reddish flower stalks begin to appear and the plants are most palatable. Plants not blooming are known as "man" plants; those bearing a flower stalk are designated as "woman," and the Indians advise against using the "man" plants for food since they are bitter and spoil all mescal with which they are baked. This is because the "man" is smoking and the smoke permeates all the mescal in the pit. The "man" changes into "woman" when it flowers, then dries up and is gone.

The crowns of the mescal plants are dug out with three-foot sticks cut from oak branches *(Quercus* sp.) and flattened at the end. This end, when pounded with a rock into the stem of the plant just below the crown, permits the crown to be removed readily. A broad stone knife is used

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252 [412] to chop off the leaves, two being left for tying the crowns together, thus making transportation more convenient. The naked crowns are bulbous, white in color, and from one to two feet in circumference.

Pits in which the crowns are baked are about ten to twelve feet in diameter and three or four feet deep, lined with large flat rocks. On the largest rock, which is placed in the center, a cross is made with black ashes. Rocks are piled on the flat stones, but care is always taken that the 252 top shall be level. Upon this, oak *(Quercus* sp.) and juniper 824 wood *(Juniperus* sp.) are placed. Before the sun comes up this is set on fire and by noon the fire has died down.

On these hot stones is laid moist grass, such as bunch-grass *(Sporobolus airoides)*, side-oats grama *(Bouteloua curtipendula)*, Texan crab-grass *(Schedonardus paniculatus)*, big blue-stem *(Andropogon furcatus)*, mesquite grass *(Muhlenbergia wrightii)*, marsh foxtail *(Alopecurus aristulatus)*, *Muhlenbergia neomexicana*, or the leaves of bear grass *(Nolina microcarpa)*, but bear grass is usually preferred since it does not burn readily. The largest mescal [788] crown is selected and a cross made on it with tule or cat-tail pollen *(Typha latifolia)*, when this is available, the pollen always being placed on the crown from East to West and 252 from North to South. The Indians then pray. Holding the [782] large crown toward the opening of the pit four times, they toss it in and throw the other crowns in after it. Next they have the youngest child present stand at the east of the pit and throw four stones into it. It should be made clear that this little ceremony held at the time of baking varies among different family groups and the above description should be regarded as one of a type rather than a fixed performance. After the mescal has been covered with the long leaves of bear grass and the whole with earth to a depth sufficient to prevent steam from escaping, the crowns are allowed to bake the rest of the day and all night. Early in the morning the [27] pit is opened and a crown examined and eaten. The pit is [784] again closed and the Indians refrain from drinking until [821] noon of this day so as to prevent rain.

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noon of this day so as to prevent rain. The following morning all the mescal is removed. 252

While the mescal is roasting the women are supposed to stay away from their husbands, and if it is not completely roasted when removed from the pit the Indians believe the women have disobeyed; also that the men should have known better. This is somewhat similar to the view held by the Pima regarding the roasting of mescal, for when the crowns were not cooked thoroughly the difficulty was attributed to the incontinence of some of the members of the party *(25:*70; *4:*11). [834] [171]

The pulpy centers of the black, roasted crowns are released from their charred leaf bases and pounded vigorously into thin sheets on a rock. This brown, juicy pulp is spread out to dry on "mescal cradles," very loosely woven shallow or tray baskets made from the leaves of *Yucca elata*, and in these the prepared mescal is carried home. Unfermented mescal juice is often sprinkled over mescal when being dried. This gives it a glaze which aids in preserving it. It may be eaten as soon as baked or dried and stored for future use in hide containers (parfleches). When wanted, the desired amount is cut off, soaked in water, and when softened the water is squeezed out and the mass eaten without further preparation. A piece of crown is cut off and chewed and the inner side of the leaves chewed and scraped, much as we eat globe artichokes. When the pithy center of the leaf is reached it is discarded. Mescal is sweet, having an agreeable taste somewhat like molasses, and a mild laxative effect. [415] [824] [251] 262 [251] [415] [252]

Many are the combinations in which mescal is used. After the dried product has been softened by soaking it is kneaded together with ground piñon seeds or walnuts (at present peanuts may be used) until the whole is of a doughy consistency; it is then ready for consumption. Mescal mixed with juniper berries *(Juniperus scopulorum)* is another favorite food, while the fruits of the three-leaved sumac *(Rhus trilobata)* are also ground with mescal and the mixture dried and stored for future use. Marcy *(13:*201), 252 262 [251] [137]

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252 writing of Apaches in the vicinity of the Guadalupe moun-
262 tains, made the following comment in the year 1849 concerning the preparation of mescal: "... we have this evening for the first time seen the Maguey plant which constitutes almost the only vegetable food that the Apaches and southern Comanches get for a great portion of the year. They prepare it by boiling it until it is soft, then mash it into a paste, and I am told that in this form it makes a very palatable, nutritious food." In view of the fact that no record has been encountered elsewhere of mescal having been pre-
[114] pared by boiling, and present day Indians have no knowledge of such preparation, it is possible that Marcy had some other plant in mind.

[137] Another well known desert plant, sotol *(Dasylirion wheeleri)* was utilized in much the same way as mescal. The crowns were gathered when the flowers were beginning to emerge, prepared in the same way as was mescal and baked for the same length of time. When baked they were
[251] removed from the pit, stripped, pounded to a pulp on a rock, and spread out to dry on "mescal cradles." The product was usually saved for winter, when it was eaten like a cake. Sotol crowns were not so desirable for food as those of mescal since they are rather hard and woody, only the youngest and most tender portions being edible.

[137] Occasionally the emerging sotol flower stalks, as well as those of bear grass *(Nolina microcarpa)*, mescal *(Agave parryi)*, and amole *(Yucca glauca)*, were removed, placed on a bed of embers and roasted for about fifteen minutes, after which the outer charred portion was stripped off. The central edible portion was white, soft, sweet, and quite palatable and was regarded as the most delicious portion of the plant. These stalks might also be boiled or eaten raw. Just as the stalk came into bloom it was removed from the plant, peeled, cut into pieces and boiled. It was then dried and stored to be used as a vegetable.

[137] Still another characteristic plant of portions of the American Southwest is the narrow-leaved soapweed or palmilla *(Yucca elata)*. The crowns of this species were gath-

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The crowns of this species were gathered any time from the middle of March to the end of summer, the portion of the stem from the ground to the leaves being peeled and baked overnight in an underground oven in a manner similar to that in which mescal was prepared. The yellow-to-brown baked product was known as *nigahe*. After being dried in the sun, broken into pieces, and softened in water the rather sweet product was ready to be eaten. The tender central leaves of the related datil *(Yucca baccata)* were cooked in soups, boiled with meat, and used in various similar combinations.

The large flowers of the narrow-leaved *Yucca elata* were also boiled and eaten as a vegetable, but the less palatable ones of the broad-leaved *Y. baccata* were eaten only if they could be obtained before the summer rain, since the Apache maintain that they are bitter thereafter.

The fruits of several species of Yucca were also utilized as food. The somewhat banana-shaped fruits of the datil *(Y. baccata)*, as well as of the palma *(Y. macrocarpa)* were gathered before they were fully ripe, laid on grass *(Andropogon furcatus)* on the ground, covered with the grass, and allowed to finish ripening in the sun. After roasting in hot ashes the hard black covering was stripped off, the fruit split lengthwise and the seeds removed. The white pulp was then ground and made into large cakes, which might be stored indefinitely. Frequently the roasted fruit was pounded to pulp on an animal hide and allowed to drain in a basket placed over a pan. The juice might be drunk or poured over and mixed with the cake pulp, making the latter soft and sticky as well as aiding in preserving it. In either case the pulp was spread on Yucca leaves to dry for two days in the sun, being always adorned with sunflower blossoms to "make it pretty." The Indians prayed while placing the sunflowers, the ceremonial significance being that the sunflower was used as a symbol of the fructifying influence of the sun, and this use constituted a prayer that the sun continue to make the yield plentiful year after year. The Mescalero Apache tell of a Yucca which grows near El Paso and has a "white" fruit and sweet sticky buds. They were

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263 picked, cut open, dried on sticks, and used in sweetening different foods.

262 [178] The fruits of various genera of cacti are still used as food but no longer constitute an important article of diet among these Apache. Formerly the Chiricahua Apache, [137] who ranged in western New Mexico, southeastern Arizona, and to the south in Old Mexico, utilized as food the fruit of the sahuaro or giant cactus *(Carnegiea gigantea)* and of the organ-pipe cactus or pitahaya dulce *(Lemaireocereus thurberi)*. Their name for it was *madaya*, an Apache corruption of pitahaya. [171] The gathering and utilization of these fruits by the Chiricahua Apache was not unlike that reported by Castetter and Underhill *(5:21)* for the Papago; [184] the reader is referred to that paper for a discussion of the subject. The Mescalero Apaches never have used these species as they do not grow within their present or past range.

252 262 [413] [824] [251] [824] The ripe fruit of a number of species of Opuntia, prickly pear cactus, was commonly utilized as food. The ripe fruits, or tunas, were removed with a pair of wooden tongs, made by doubling a pliable branch, and cleaned of spines with a brush of stiff stems of sacaton grass *(Sporobolus wrightii)* while held with the tongs. The fruit was then placed in burden baskets and taken home to be eaten fresh or dried and stored. To dry, the fruit was split lengthwise, freed of seeds, and placed on big blue stem grass *(Andropogon furcatus)* in the sun. Sun-dried fruit was usually boiled before eating, although soaking in water sometimes softened it [251] enough for use. Sometimes, after the seeds were removed, the fruit was mashed into a pulp and stored in this caked [153] form. Many of the Indians of the Southwest contend that these tunas or nopales must be eaten with discretion as too much of the fruit causes a fever; Bourke *(2:44)* corrobor- [222] ates this. The Chiricahua and Mescalero Apache women [482] collected the tunas in large baskets carried on their backs, suspended from a tumpline which rested on the upper part [251] of the chest. The split fruit was spread out to dry in the sun. Tunas formerly constituted a very important Apache food.

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food. The fruits of the hedgehog cactus *(Echinocereus coccineus)*, the salmon-flowered hedgehog *(E. lecanus)*, the desert strawberry *(E. fendleri)*, the golden spined strawberry *(E. chrysocentrus)*, and the rainbow cactus *(E. rigidissimus)* were gathered occasionally and eaten fresh. Several species of *Neomammillaria*, including the sunset cactus *(N. grahami)*, the snowball pincushion *(N. olivia)*, and the horned toad cactus *(N. mainae)* were at times eaten without preparation, although fruits of the sunset cactus were often dried and stored for winter use, when they were cooked before being eaten.

Mesquite *(Prosopis glandulosa)* is one of the most widespread and best known plants of the Southwest and its sweet, nutritious fruits have been and still are rather extensively used as a source of food. The beans of the mesquite were gathered, boiled, pounded on a hide or ground on a metate, the mixture placed in a pan and worked with the hands until it attained a thick consistency. Formerly the raw beans were ground on a metate into flour, at present a meat grinder is used for this purpose. In either case the seed coats were winnowed from the flour. The mesquite flour was usually made into bread as well as into a sort of pancake, which these Indians regarded as most delicious. Frequently the beans were cooked with meat, and the seed coats spit out as the combination was eaten. Gregg *(8:*102), evidently referring to these Apache of New Mexico, wrote that the mesquite pod was ground for flour with which to make their favorite pinole.

Occasionally the pods containing the seeds were boiled in water until the mixture turned red, after which the pods were taken out and mashed by hand, then put back in the container and boiled again until the water had been almost all boiled off. This constituted a sort of pudding.

Similarly the yellow fruits of the screw bean or tornillo *(Strombocarpa pubescens)* were extensively gathered, dried, and stored in sacks. The pods, which are somewhat sweeter than those of the mesquite, might be chewed and eaten raw as a delicacy but they were more commonly dried,

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252 washed, ground into flour, and made into a sort of bread.
262 Both this and the mesquite bread are still extensively used by these Apache. This was also reported by Bourke *(2:*50) and by Standley *(28:*458).

252 In the fall of the year the pods of the New Mexican
251 locust *(Robinia neomexicana)* were occasionally eaten raw.
262 However, they were more often cooked, stored, and utilized
137 similarly to those of the mesquite. The large clusters of pink flowers were gathered in late June, boiled, and eaten as a vegetable; or they might be stored in bags, and when wanted, re-cooked.

252 The Apache also utilized as food the small wild potato
262 *(Solanum jamesii)*, common in the valleys, as well as *S.*
137 *fendleri*, found usually in the mountains. The potatoes of the former species were usually gathered in August, while those of the latter species were not gathered until the end of September. They were boiled unpeeled and thus eaten. The *S. jamesii* product was sometimes dried, stored, and later ground into flour for making bread.

The tuberous, rather sweet, but tough roots of the Indian potato or *camote de raton (Hoffmanseggia densiflora)*, which were to be found growing only on the flats, were eaten either raw or cooked.

All species of oak, except one, go under the name *tcintcile; Quercus grisea* was known as *tcintcile donagogade*, "oak that never dies," and its acorns were used for food as were those of the Gambel oak *(Q. Gambelii)* although the fruits of the latter are not so sweet as those of the live oak and were, therefore, not as extensively used. In any event
[251] the acorns were frequently gathered when ripe, roasted slightly, then pounded and mixed with dried meat or fat and the mixture stored away in hide containers. The fruit might also be eaten raw. Walnuts or nogales *(Juglans major)* ripened in September, when they were gathered,
[251] pounded with clubs to remove the hulls and washed. The nut meats were often eaten raw, but were at times mixed with mesquite gravy or ground and combined with roasted mescal, and the mixture stored. The Warm Springs Apache

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(a Chiricahua band) at present prepare the meats by boiling in water. 252 262 137

The seeds of the piñon pine *(Pinus edulis)*, which ripened in October, were very extensively gathered for food before they fell from the tree. The "nuts" were either eaten raw or roasted for a few minutes in a pan so they would keep, then shelled. Often they were mixed with pulp from the fruits of yucca to make a pudding. When used raw they were ground, rolled into balls, and eaten as a sort of delicacy. These Apache did not permit their pregnant women to eat piñons, lest the child would be born with fat all over the body and make delivery difficult. [843] [845]

In times of food scarcity the seeds of the western yellow pine *(Pinus scopulorum)* were utilized but they never constituted an important article of diet on account of their small size. They were ground, the edible portion rolled into balls and eaten raw. Those of the limber or western white pine *(Pinus flexilis)* were larger and might be utilized but were likewise of little importance since the species was not abundant. Formerly the seeds were gathered before they began to fall, by shaking from the cones, but never before fully ripened. They were then roasted and hulled, or sometimes the seeds ground, shell and all, and eaten.

It might be well in this connection to mention the use of pine bark as a source of food by the Apache. The inner bark of *Pinus scopulorum* is quite sweet and palatable and has often been utilized as food, especially when other foods were not abundant. Portions of bark were stripped from the tree and the inner bark scraped off. Hrdlička *(12:22)* referred to it as being baked in the form of cakes. Formerly these Indians cut out large squares of bark with a long pointed stick and scraped off the inner bark with a smaller, sharpened piece of wood. It was usually boiled, or it might be chewed and eaten raw, but in this state it was rather difficult to digest. If boiled for a considerable period of time the sugar would crystallize out. The bark of large aspen trees *(Populus tremuloides)* was also utilized in the same [413]

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252 262 137 way. Children commonly ate the sweet bark of sumac *(Rhus cismontana)* as a delicacy.

263 222 137 Not unlike the above was the obtaining of sugar from the box elder maple *(Acer negundo)*. In olden times, before sugar was easily obtainable commercially, these Indians secured material for sweetening by boiling the inner bark, and outer portions of the wood just beneath the bark, until [251] the sugar which it contained crystallized out. Also scrapings from the inner bark were dried and placed in the *xel* (parfleche) for winter use. Likewise sap from the New Mexico maple *(Acer neomexicana)* was collected and boiled to obtain syrup and sugar.

252 262 137 A number of species of fruits were occasionally eaten but did not constitute important Apache foods. Among these were strawberries *(Fragaria bracteata)* and the purplish fruits of the wild privet *(Forestiera neomexicana)*, which were always eaten without preparation. Raspberries [251] *(Rubus arizonicus)*, mulberries *(Morus microphylla)*, and hawthorne fruits *(Crataegus cerronis)* were either eaten fresh or pressed into pulpy cakes, dried and stored for winter use.

Wild gooseberries and currants were quite commonly used. The purplish red fruits of the spiny-fruited gooseberry *(Ribes pinetorum)* has a pleasant acid flavor when ripe in September, at which time the spines may be easily [251] brushed from the fruits. They were ground and compressed into cakes for winter consumption. Another gooseberry *(R. leptanthum)*, which has smooth fruits, somewhat larger than the former species, was eaten fresh or made into cakes for use during the winter. This species was the most eagerly sought because of the size of its fruits. The rather insipid fruits of two species of black currant, *Ribes wolfii* and *R. mescalerium*, were at times eaten without preparation [251] by these Indians. Fruits of the former, in earlier times, [198] were ground, dried, and pressed into cakes for storage, but are now used for jelly; those of the latter species, however, are usually cooked. Grapes *(Vitis arizonicus)*, which grow

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in the mountains and ripen from July to September, were eaten fresh or might be dried and eaten like raisins.

Fruits of the one-seeded juniper *(Juniperus monosperma)* were commonly roasted in a pan over the open fire, a little water added, and when the whole became thick and white it was used as a gravy. The larger fruits of *J. pachyphloea* were eaten fresh when they ripened in July, at which time they were rather sweet. They might be roasted on heated stones and used either whole or ground. One informant reported that the "berries" are boiled and made into jellies or preserves, either in July or during the winter.

The white evening primrose *(Anogra albicaulis)*, as well as one or two other species of this genus, has podlike fruits that were occasionally chewed as a delicacy without preparation; the seeds might be ground and made into a sort of gravy or boiled in soups. The white seeds of the anglepod *(Vincetoxicum productum)*, which ripen and open in September, as well as the pods of *Maurandia wislizeni*, were eaten fresh or after being boiled. Children occasionally gathered pods of the evening primrose, *Galpinsia lavandulaefolia*, cooked, and ate them, but they were not an important article of food. The hard fruits of *Jamesia americana*, which also ripened in September, contained large seeds and were occasionally eaten fresh. Children commonly ate fresh ripe ground-cherries *(Physalis neomexicana)* as a delicacy. The Chiricahua Apache say that the seeds of the unicorn plant (probably *Martynia louisiana*) were eaten by the boys when these Indians were prisoners of war in Oklahoma.

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Several plants were utilied as chewing gum, the most common being the milkweed *(Asclepias speciosa)*. The "milk" was squezeed from the leaves and stems on a heavy black clay and the mixture chewed like ordinary gum. The resinous secretion from the trunk of the piñon pine *(Pinus edulis)* was also chewed, as well as the buds of the valley cottonwood *(Populus wislizeni)*.

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In this connection it may be noted that the Apache frequently made jelly from fruits such as algerita berries

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252 262 137 *(Berberis haematocarpa)*, which ripened in September, and elderberries *(Sambucus microbotrys)*. These were cooked with a sweet substance, strained, and allowed to jell. Rose hips *(Rosa fendleri)* were at times eaten fresh but more frequently the pulp was squeezed into water and boiled to make jelly, while black chokecherries *(Prunus melanocarpa)*, which ripened in August, were either eaten fresh or [251] cooked to make a sort of preserve. Most commonly, however, the fruits were ground, pressed, and saved for winter, when the mass was cooked to make jelly. The Mescalero 262 Apache have used these chokecherries for many years. The 184 Chiricahua Apache called the fruit of this particular variety "bear's food" and did not eat them until they saw the Mes- 262 calero Apache do so. Another species of chokecherry *(Prunus* sp.) which grew in the Mescalero country was never eaten by the Apache, and most of these Indians were afraid to touch the fruits. The few who did occasionally eat them said they were intoxicating, and that the only way to counteract their effect was to eat fresh meat. The [251] fruit of the hackberry, *Celtis reticulata*, which ripened late [252] in September, was either eaten fresh or ground, caked, and dried for winter use. Sometimes jelly was made from it.

252 In common with many other groups of southwestern 262 Indians these Apache utilized to a considerable degree the 137 three-leaved sumac *(Rhus trilobata)*. The red fruits were gathered from midsummer to fall and dried in the sun. After grinding between flat stones the pulp was mixed with water and sugar and cooked. This jam was formerly commonly eaten with bread made of sunflower seeds and with prepared mescal. The fruits of *Rhus microphyllus* were similarly utilized.

Wild plants used as greens by the Apache, as well as other Indians of the Southwest, were red root or tumbleweed *(Amaranthus graecizans)*, purslane *(Portulaca oleracea)*, lamb's quarter, often called Indian spinach *(Chenopodium alba)*, leaves of pigweed *(Amaranthus retroflexus)*, the leaves of *Rumex occidentalis*, and osha or chuchupate *(Ligusticum porteri)*; all these are still utilized at the pres-

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ent time. They are not only eaten without preparation but are boiled and quite frequently cooked with meat or just the bones of animals, in combination with green chile and onions. Wood sorrel *(Oxalis violacea)* is often mixed with other leaves to be cooked or is eaten raw. The tops of fetid marigold *(Dysodia papposa)* and shepherd's purse *(Capsella bursa-pastoris)* are also used as greens, either cooked alone or with meat. 252 262 137

The young white rootstocks of cat-tail *(Typha latifolia)* were frequently gathered in the spring of the year and cooked with meat, as were the corm-like tubers of the sedge *(Cyperus fendlerianus)*. These were peeled and cooked or eaten raw. The Apache name for the last species, "feed to horse," was so given because the flowers and seeds were salted and fed to horses, and were said to be very fattening. The bulbs of wood-sorrel *(Oxalis violacea)* were eaten raw or, when abundant, were boiled. The raw fleshy roots of chimaja, also known as wild celery *(Cymopterus fendleri)*, were also utilized.

Leaves of dragon-head *(Dracocephalum parviflorum)*, the mint *(Mentha penardi)*, horsemint *(Monarda menthaefolia)*, and the pennyroyal *(Hedeoma nana)* were commonly used for flavoring. These Apache say that if they had no pepper this last named species was substituted in soups, but was not added until the soup had finished cooking. They also used the mint to keep water "cool," but probably meant that it made water more palatable to drink by imparting to it a cooling flavor. Hops *(Humulus lupulus neomexicanus)* were gathered in October, boiled, and used for flavoring in a considerable variety of ways. Formerly they were mixed with mesquite and screw bean flour (see p. 41) but at present they are mixed with wheat flour; they were also combined with wild potatoes to give flavor. More commonly they were used to flavor *tulbai*, the drink made from fermented maize. Wild onions *(Allium cernuum* and *A. geyeri)* flavored soups and gravy but were occasionally eaten raw. A sage, *Artemisia ludoviciana*, was also a flavoring substance for meat. A plant in very common use by vari- 263 137 [273] [262] [252]

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263 ous Indian groups of the Southwest was chimaja, also known
137 as "wild celery" *(Cymopterus fendleri)*, and these Apache used the leaves for flavoring soups and meats. It was gathered when in flower or seed and had a mild flavor intermediate between that of celery and carrot. The leaves were used
[262] in combination with other green plant parts and the roots
[252] were eaten raw.

Seeds of many plants held an important place in the
262 Apache diet, one of the more important ones being red root
252 or tumbleweed *(Amaranthus graecizans)*. The inflores-
137 cences were pulled from the plant, threshed by rubbing between the hands, and the seeds winnowed and ground to make flour for bread. Other species of Amaranthus, especially *A. retroflexus*, the pigweed, were similarly utilized. Four species of grass—dropseed *(Sporobolus cryptandrus)*, *Muhlenbergia* sp., *Panicum bulbosum minor*, and grapevine mesquite grass *(Panicum obtusum)*—were also used for food, the seeds of the first three being threshed, winnowed, and ground into flour for bread. Seeds of the dropseed grass were boiled and eaten as porridge, while those of *Panicum obtusum*, as well as *Panicum bulbosum*, were ground to make gravy and mixed with meat. The small seeds of the shepherd's purse *(Capsella bursa-pastoris)* and fetid marigold *(Dysodia papposa)* were secured by cutting off the tops of the plants and beating them on a hide. Then
[251] the seeds were winnowed in a basket tray in the wind. After drying they were stored and, when needed, ground into flour for bread. Sometimes the seeds were roasted without grinding and combined with other foods.

Ripe sunflower seeds *(Helianthus annuus* and *H. canus)* were gathered in the fall of the year by threshing. Those of the former species were also harvested when dead ripe, by women, who placed a basket under the plant and sharply struck the back of the sunflower head with a stick, knocking the seeds into the basket. They were sometimes ground and the flour used for a thick gravy, but more commonly this was sifted, made into dough, and baked on hot stones or in hot ashes. This kind of bread is still in common use. Cre-

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mony *(6:296)* reported the use of sunflower seeds among the Apache who ground them on a metate and made the resulting flour into cakes; Bourke *(2:47)* referred to the Apache and other Indian groups as having cultivated the sunflowers about 1870, the seeds of which were ground with corn into meal and made into cakes. Bourke's information that the Mescalero and Chiricahua Apache cultivated the sunflower is probably erroneous for these Indians are not known to have ever cultivated this plant. A jam made from the fruits of the three-leaved sumac *(Rhus trilobata)* was formerly extensively eaten with bread made from sunflower seeds. This jam is no longer in common use.

Seeds of other plants ground to make bread were notably false flax *(Camelina microcarpa)*, tansy mustard *(Sophia incisa)*, and the thistle *(Cirsium pallidum)*, none of which, however, were utilized extensively. The plants were threshed mechanically—false flax and thistle by shaking vigorously in the sack in which they were collected, tansy mustard by beating the pods with sticks. They were then winnowed, formerly in a hide because the seeds, especially those of false flax, would go through a burden basket, although a *tsa* (shallow basket) could be used. The flour from these species of seeds was made into dough and baked or the seeds might simply be boiled and eaten as were sunflower seeds.

The ripe pods of the vetch, *Vicia melilotoides*, as well as the wild pea, *Lathyrus leucanthus*, were cooked and eaten, or they might be dried and stored, to be soaked and boiled later.

BEVERAGES AND NARCOTICS

The most common and important drink among the Mescalero and Chiricahua Apache was *tulbai* (an Apache term meaning "water, grey" from the Apache *tu*—"water" and *bai* from *tibai*—"grey") One occasionally reads about the Apache using *tiswin*, also *twilt-kah-yee*. Cremony *(6:245)* wrote of an intoxicating beverage by the latter name, distributed freely by the Apache at their puberty

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273 [192] ceremonies. The Spanish-American name is *tesvino*, probably connected with *vino*—wine, and the Americans have altered it to *tiswin*. *P'tiswing* was evidently another modification of *tesvino* or *tiswin*. The Indians, many of whom spoke Spanish, often used the term *tesvino* and now often use *tiswin* instead of the native term. *Tulapai* and *twiltkah-yee* were probably attempts of the whites to pronounce the native name. To make the beverage, shelled maize was soaked in water for about twenty-four hours and placed in a narrow trench lined on both sides with grass. The maize was covered with grass and soil, then with a blanket; or sometimes the blanket was laid directly over the corn without the use of grass and soil. Each morning the trench was sprinkled with water to facilitate the germination of the maize. When the corn-sprouts were about one and one-half inches long the seedlings were removed from the trench and finely ground twice between two rocks, then boiled in water until the mixture was reduced to half the original quantity. Enough water was added to fill the vessel and the liquid again boiled for a short time (until about two inches from the top of the vessel), strained through a cloth (at present a flour-sifter is often used), and cooled. It was allowed to ferment in a water jar until about noon of the next day, when it was ready for consumption. According to Hrdlička (*11*:191), as well as Browne (*3*:411), the general practice was to place the mash in a jar that previously had been used for brewing and which was never washed, the pores of the vessel retaining the organisms necessary to start fermentation. In the absence of sugar, mesquite flour (*Prosopis glandulosa*) [263] or sahuaro syrup (*Carnegiea gigantea*) was used as sweetening. This finished product is known as *tulbai* and must be drunk within a few hours after it is prepared or "it gets weak and is no good." In other words, the alcohol is converted into acetic acid, giving the beverage a sour taste.

273 462 Mention should be made here that the preparation of this beverage was the woman's work and prerogative, and men seldom had anything to do with the brewing. Some of

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the women became quite proficient and well known for their abilities along this line. 273 [462]

The above was the usual method of preparing *tulbai* but a number of variations of the process have been developed. Ground wheat was often added to the boiled corn to make the beverage foam, also to make it stronger. Occasionally yeast was combined with the mixture and not infrequently the juice of fermented mescal was squeezed into the liquid to hasten fermentation as well as to give a blended flavor. Chips of shaved oak root *(Quercus grisea)* gave [137] the *tulbai* flavor, and mesquite root *(Prosopis glandulosa)*, [824] dandelion flowers *(Taraxacum officinale)*, and hop flowers *(Humulus lupulus neomexicanus)* were used for the same purpose, and to make the drink stronger. Hrdlička *(12:27)* referred to small quantities of roots of native plants being added to *tulbai* as "medicine." Our observation is that this needs qualification, to the extent that the Apache do say that *tulbai* is "good for you" and "cleans you out," but they do not use it in the first instance as medicine.

Frequently, wheat instead of corn was used to make the beverage, the process of germination, grinding, boiling, and fermenting being the same as with corn.

Both the Mescalero and Chiricahua Apache claim that 273 they had no knowledge of *tulbai* in the distant past and that 179 its use penetrated among them from the south. Most accounts have it that the Lipan Apache brought it northward, but some state it was learned from the natives of northern Mexico. Hrdlička *(11:190)* and Browne *(3:411)* are of the opinion that the preparation and use of this beverage was learned by the Apache from the Mexican Indians, Hrdlička recording that it was brought to the White River Apache from the more southerly Chiricahua Apache, who were said to have learned to make it in Mexico.

Murphy *(16:347)*, writing in 1865 as military superin- 273 tendent of the Mescalero Apache, recorded his reluc- 648 tance to give these Indians whole corn because they made from it an intoxicating drink—*"teeswin"* on which they got very drunk. In consequence no corn, but corn flour,

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273 was issued to them. The Mescalero Apache were reported
648 by their agent (*24*:291) in 1900, as having made no *tulbai* since 1897. This is widely at variance with other reports and studies, however, for large quantities are known to have been made and consumed during that period.

273 Hrdlička (*12*:28) recorded that the Mescalero Apache
[137] formerly made an intoxicating drink from the inner bark of the western yellow pine (*Pinus scopulorum*), and this was at times mixed with *tulbai*.

Another alcoholic drink among these Indians was mescal. The mescal crowns were roasted as described under the section on foods, and the outer leaves removed. The inner portion was cut into pieces, pounded until soft, and the pulp placed in a pouch made of animal hide. This was buried in the ground where it was usually allowed to remain for two days, although the Indians claimed that the longer it was buried the better it became. When removed from the ground the juice was squeezed from the pulp into a container and allowed to ferment for two or three days, when it was ready for use. Thus prepared, the mescal drink was quite potent. An occasional Apache allowed the mescal juice to spoil (change to a high percentage of acetic acid) before getting drunk on it. Cremony (*6*:217), in 1868, reported that the Apache made a drink by macerating the mescal root in water and allowing the mixture to ferment for several days, after which the liquid was boiled down to produce a strong intoxicating beverage. This use of the root seems unusual for we have nowhere encountered this custom among these Apache.

[137] Similarly, sotol crowns (*Dasylirion wheeleri*) formerly were pit-baked for one night only, removed, peeled, crushed, mixed with a small amount of water in a rawhide container, and allowed to ferment underground about a day, or until fermentation had practically ceased, when the drink was
[415] ready for use. The concoction was also placed in pitch covered water jars or in wooden jugs cut from trees. Informants reported that the beverage might be allowed to stand for a month before being used. We have not been able to learn

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from our informants that these Apache ever distilled this or any other alcoholic beverage. 273

Both sotol and mescal beverages were reported as being older than *tulbai*. Informants said that they learned the use of *tulbai* from the Lipans and the Yaqui. [177]

Another mildly intoxicating alcoholic beverage formerly prepared, although at present not in common use, was made by finely grinding cooked mesquite *(Prosopis glandulosa)* pods and seeds. A little water was added during the grinding process and more to the ground mass, then the mixture allowed to ferment for a day and a night. This is a very old drink among the Apache. [139] [178]

These Apache formerly prepared and still make pinole as a very common drink. The fresh fruits of screw bean *(Strombocarpa pubescens)* were ground and to the meal was added some sweetening substance (sugar is now used) to make a thick drink. Another method of preparation was boiling the fruit until it got soft, making a sort of gruel, then adding the sweetening substance and drinking it. 272 [137]

The fruits of a number of species of Opuntia or prickly pear cactus were and still are mashed, the juice extracted and drunk, without fermenting, as a refreshing beverage which was regarded as very healthful. Non-intoxicating beverages were also made by boiling the leaves and young stems of the sage *(Artemisia aromatica)*, *Leucelene ericoides*, horsemint *(Monarda menthaefolia)*, pennyroyal *(Hedeoma nana)*, as well as the leaves of the lip fern *(Cheilanthes fendleri)* and cota *(Thelesperma gracile)*. This last named species which the Apache call "tea" has been extensively used in common with practically all Indians of southwestern United States, from ancient times down to the present, to make a beverage. Portions of the plant were wrapped into small bundles and might be used fresh or stored indefinitely. When boiled in water a red liquid was produced and was usually consumed without being sweetened, although the addition of a little sugar made the drink even more palatable. A drink used much as is coffee, made by boiling the fresh leaves of mariola *(Parthenium in-* [137] [171] [263] [137]

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272 137 *canum)*, is the beverage known as *gaxe*. (This Indian word was derived from the Spanish word for coffee.)

* * *

276 [137] The Apache used a few species of plants as narcotics. One of these was *Broussonetia secundiflora*, known as "mountain laurel," and also by the Spanish names *frijollito* or *frijolilla*. It is a beautiful evergreen shrub with glossy dark green leaves, common in the Guadalupe Mountains southwest of Carlsbad, although these Apache report having gathered bags full of beans on the roadside in the hills twenty miles from Roswell, as well as in Mexico.

The large, scarlet beans of this legume have been widely reported as being poisonous, having rather marked narcotic effects. The Apache are well aware of its narcotic effect. In [173] one of their stories the trickster, coyote, intoxicates a party of prospectors by means of the beans. Present day Apache [273] are not familiar with its use in *tulbai* but they report that the beans were formerly mixed with that beverage occasionally. One of our informants, speaking of the beans, said, "One day I felt sleepy. I ate two of these beans out of a pod. It sure waked me up. I didn't see anything. I just felt good." The beans were rarely eaten by the Apache, however. These seeds were also used ceremonially and an occasional Apache might be seen to wear a string of the red beans around his neck. According to Havard *(10*:39) these seeds contain an alkaloid, sophorine, which is a strong irritant narcotic poison. He also records that, according to Bellanger, the Indians near San Antonio, Texas, formerly used them as an intoxicant, half a bean producing "delirious exhiliration followed by a sleep which lasts two or three days" and that a whole bean would cause death.

[171] [139] Peyote or the Dumpling Cactus *(Lophophora williamsii)*, which contains a powerful alkaloid, was formerly in common use by the the Indians of northern Mexico who sliced and dried the plant and employed it in association with their [177] ceremonial dances *(27*:104). It is reported that the use of Peyote by the Indians was learned from the Mexicans *(23*:1).

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It is not generally known that the Mescalero Apache (not the Chiricahua) ate peyote. They are not represented on Shonle's *(26)* map of the distribution of the use of peyote in the United States nor are they listed in the booklet compiled under the authority of the Bureau of Indian Affairs *(17)*. Opler *(22)* has shown, however, that the Mescalero Apache once practiced elaborate ceremonies centering around the utilization of peyote and he has gathered considerable data from former peyote eaters regarding the details of these rites and their place in the religious life of the tribe.

One of our informers said: "I ate it once in Oklahoma four or five years ago. I ate five ('buttons') my first time. It sure tasted strong. A man put eagle feathers over me and said, 'Go on and eat.' I did. I ate one at a time. They were bigger than the ones you have. They were green yet. One man ate 106 of them." The alkaloid of the plants affects the eyes and produces trances in which one has fantastic and colorful visions *(26:1)* but it is neither intoxicating nor habit forming. These Apache also claim that if the hairs from the plant get into your eyes they destroy the eyesight. Details concerning chemical composition and physiological and psychological effects of peyote are given in a bulletin by the office of Indian Affairs *(23)*.

The small, red fruits of the turkey or coyote cactus *(Opuntia leptocaulis)*, known among the Spanish-Americans as *tasajulla* and *garrambulo*, are still used by being crushed and mixed with *tulbai*. They are reported as having such pronounced narcotic effects that the Indians will not walk close to plants which bear them, and they claim that eating a single fruit will make one "drunk and dizzy."

These Apache do not now and apparently never have used Jimson weed *(Datura meteloides)*, or any other species of the genus, as a narcotic.

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List of Common, Apache, and Scientific Names of Plants to Which Reference Has Been Made

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Aciphyllaea, *tsisdzanebizaye*—"Small woman wood" *(Aciphyllaea acerosa* (DC.) A. Gray)

Algerita or redberry, *tsiltsui*—"yellow wood" *(Berberis haematocarpa* Woot.)

Amole, soapweed, *etlode*—*(Yucca glauca* Nutt.)

Anglepod, *digone*—*(Vincetoxicum productum* (Torr.) Vail)

Aspen, *tanabazi*—"round leaves" *(Populus tremuloides* Michx.)

Beargrass, *etlodcitsa*—"Yucca fringed" *(Nolina microcarpa* S. Wats.)

Cactus, coyote or turkey, tesajo, *zuelogo*—"crazy cactus" *(Opuntia leptocaulis* DC.)

Cactus, giant or sahuaro, *xucntsai*—"large cactus" *(Carnegiea gigantea* (Engelm.) Britt. & Rose)

Cactus, golden-spined strawberry, *xucbi*—*(Echinocereus chrysocentrus)*

Cactus, hedgehog, *xucbi*—*(Echinocereus coccineus* Engelm.)

Cactus, hedgehog or desert strawberry, *xucbi*—*(Echinocereus fendleri* (Engelm.) Rümpl.)

Cactus, salmon-flowered hedgehog, *xucbi*—*(Echinocereus lesanus* (Hook.) Lemaire)

Cactus, horned toad, *xucdedjulebizaye*—"small round cactus" *(Neomammillaria mainae* K. Brandegee)

Cactus, orpan pipe, pitahaya dulce, madaya *(Lemaireocereus thurberi* (Engelm.) Britt. & Rose)

Cactus, prickly pear, *gulteide*—*(Opuntia* sp.)

Cactus, rainbow, *xucbi*—*(Echinocereus rigidissimus* (Engelm.) Rose)

Cactus, snowball pincushion, *xucbi*—*(Neomammillaria elivias* Orcutt)

Cactus, sunset, *xucbi*—*(Neomammillaria grahami)*

Cat-tail, *tel*—*(Typha latifolia* L.)

Celery, wild, chimaja, *tlotalbildadjinindei*—"plant they drink soup with" *(Cymopterus fendleri* A. Gray)

Chokecherry, *dze*—*(Prunus melanocarpa* (A. Nels.) Rydb.)

Chokecherry, *dzedeyui*—"sour choke cherry" *(Prunus virens* (W. & S.) A. Nels.)

Cota, Indian tea, *tlogaze*—"coffee plant" *(Thelesperma gracile* (Torr.) A. Gray)

Cottonwood, valley, *tis*—*(Populus wislizeni* (S. Wats.) Sarg.)

Currant, *libidze*—"horse berry" *(Ribes mescalerium* Coville)

Currant, *nantsee*—"black fruit" *(Ribes wolfii* Rothr.)

Dandelion, *tloniltse*—"kills grass" *(Taraxacum officinale* Web.)

Datil, soapweed, *etlode*—*(Yucca baccata* Torr.)

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137 Dock, *tcigoetline*—"it is sticky" (*Rumex occidentalis* S. Wats.)
192 Dragon-head, *dziltlohnltcin*—"smelly mountain plant" (*Dracocephalum parviflorum* Nutt.)
Elderberry, *tsizol*—"soft wood" (*Sambucus microbotrys* Rydb.)
Evening primrose, *ndabaze*—"eye medicine" (*Anogra albicaulis* (Pursh) Britton)
Evening primrose, yellow, *tlonaitsui*—"plant with yellow flowers" (*Galpinsia lavandulaefolia* (Torr. and Gray) Small)
Evening primrose, *bincstandadjiale*—"its fruit that is chewed" (*Anogra* sp.)
False flax, *tlaldei*—(*Camelina microcarpa* Andrzej.)
Fern, lip, *tlogaze*—"coffee plant" (*Cheilanthes fendleri* Hook.)
Gooseberry, *dayдje*—(*Ribes leptanthum* A. Gray)
Gooseberry, *dayдje*—(*Ribes pinetorum* Greene)
Grape, *dastsa*—(*Vitis arizonica* Engelm.)
Grass, *tlobindaltitei*—"red-eyed grass" (*Muhlenbergia neomexicana* Vasey)
Grass, big blue-stem, *tloltcide*—"red grass" (*Andropogon furcatus* Muhl.)
Grass, bunch, *tlaltso*—"big grass" (*Sporobolus airoides* Torr.)
Grass, dropseed (*Sporobolus cryptandrus* (Torr.) A. Gray)
Grass, grape-vine mesquite, *ndatso*—"big eye" (*Panicum obtusum* H. B. K.)
Grass, marsh foxtail, *lostsobitse*—"rat tail" (*Alopecurus aristulatus* Michx.)
Grass, mesquite, *tlo*—"grass" (*Muhlenbergia wrightii* Vasey)
Grass, *tlobinda*—"grass, its seeds" (*Muhlenbergia* sp.)
Grass, panic, *tloldei*—(*Panicum bulbosum* H. B. K.)
Grass, sacaton (*Sporobolus wrightii* Munro)
Grass, tall, or side-oats grama, *tlobindailkehntii*—"grass with the seeds lying on top of one another" (*Bouteloua curtipendula* (Michx.) Torr.)
Grass, Texan crab, *tsiyetlo*—"mosquito grass" (*Schedonardus paniculatus* (Nutt.) Trel.)
Ground-cherry, *nestani ygati*—"fruit that you see through" (*Physalis neomexicana* Rydb.)
Hackberry, *iyntlidz*—"hard seed" (*Celtis reticulata* Torr.)
Hawthorne, manzana de puya larga, *itcocntsei*—"big rose" (*Crataegus cerronis* A. Nels.)
Hop vine, *banbilagolndahi*—"make bread with it" (*Humulus lupulus neomexicana* A. Nels. and Cockerell)
Horsemint, *tlotdai*—(*Monarda menthaefolia* Graham)
Jamesia, *tsilbaye*—"grey wood" (*Jamesia americana* Torr. and Gray)
Jimson weed, *itanasbase*—"round leaf" (*Datura meteloides* DC.)

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Juniper, alligator, *talehntsai*—"large juniper" (*Juniperus pachyphloea* Torr.) 137 192
Juniper, one-seeded, *tale*—"popping (when burning)" (*Juniperus monosperma* (Engelm.) Sarg.)
Juniper, Rocky Mountain, *taledeyui*—"sour juniper" (*Juniperus scopulorum* Sarg.)
Lamb's quarter, *ita*—"leaf" (*Chenopodium alba* L.)
Locust, New Mexican, *tlogocade*—"hooked plant" (*Robinia neomexicana* A. Gray)
Leucelene, *tloignibizaye*—"small white plant" (*Leucelene ericoides* (Torr.) Greene)
Maple, box elder, *teilntsei*—"large ash?" (*Acer negundo* L.)
Maple, New Mexican, *itaacdlaye*—"five leaves" (*Acer neomexicanum* Greene)
Marigold, fetid, *tlonda*—"plant with seeds" (*Dysodia papposa* Hitchc.)
Maurandia, *tlonanesdidzi*—"vine" (*Maurandia wislizeni* A. Gray)
Mescal, century plant, *inada* (*Agave parryi* Engelm.)
Mesquite, *nastane*—"that which lies about" (*Prosopis glandulosa* Torr.)
Milkweed, *tloibee*—"milk plant" (*Asclepias speciosa* Torr.)
Mint, *tlohntcine*—"smelly weed" (*Mentha penardi* (Briq.) Rydb.)
Mountain laurel, frijollito or frijollilla, *yultudi*—"red bead" (*Bronssonetia secudiflora* Orteg.)
Mountain Mahogany (*Cercocarpus montanus* Raf.)
Mulberry, *tselkane* (*Morus microphylla* Buckl.)
Oak, *tcintcile* (*Quercus*—all species except the following one)
Oak, *tcintcile donagogade*—"oak that never dies" (*Quercus grisea* Liebm.)
Onion, wild *dzilyasayya*—"mountain onion" (*Allium cernuum* Roth.)
Onion, wild (*Allium geyeri* S. Wats.)
Osha, chuchupate, *haitcide*—"dig up" (*Ligusticum porteri* Coult. & Rose)
Palma (*Yucca macrocarpa* (Torr.) Engelm.)
Palmilla, *etlodeitsos*—"slender yucca" (*Yucca elata* Engelm.)
Pea, wild, *teitcada* (*Lathyrus leucanthus* Rydb.)
Pennyroyal, *tlonltcine*—"smelly plant" (*Hedeoma nana* (Torr.) Greene)
Peyote, dumpling cactus, *xuelndjintndei*—"cactus which they eat" (*Lophophora williamsii* (Lemaire) Coult.)
Pigweed, *ndaji*—"black eye" (*Amaranthus retroflexus* L.)
Pine, limber or Western white, *gadndeze*—"long needles" (*Pinus flexilis* James)
Pine, piñon, *nictci* (*Pinus edulis* Engelm.)

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137 Pine, Western yellow, *benteiye*—"wind blows against it" (*Pinus scopulorum* Lemmon)
192 Pitahaya dulce. See organ pipe cactus
Plum, wild, *dzetso*—"big berry" (*Prunus americana* Marsh)
Potato, Indian, camote de ratón, *leisdze*—"rots in the ground" (*Hoffmanseggia densiflora* Benth.)
Potato, wild *dzilyanigokadze*—"mountain-top potato" (*Solanum fendleri* A. Gray)
Potato, wild, *nigokadze bezaye*—"small potato" (*Solanum jamesii* Torr.)
Privet, wild *iyentlidzi*—"hard seed" (*Forestiera neomexicana* A. Gray)
Purslane, common, *tsilyalcide*—"red hair" (*Portulaca oleracea* L.)
Raspberry, *dakalentsei*—"big strawberry" (*Rubus arizonicus* (Greene) Rydb.)
Red root, tumbleweed, *ndajin*—"black eye" (*Amaranthus graecizans* L.)
Rose, wild, *itcoc* (*Rosa fendleri* Crép.)
Rubber plant, New Mexican, mariola, *tlonadjiltohe*—"plant for smoking" or *tsigaze*—"wood coffee" or *gaze*—"coffee" (*Parthenium incanum* H. B. K.)
Sage, *iyaai*—"extends up" (*Artemisia aromatica* A. Nels.)
Sage, *tsejintsi*—"strong smelling sage" (*Artemisia ludoviciana* Nutt.)
Sahuaro. See giant cactus.
Screw bean or tornillo, *tsesdise*—"rock twisted" (*Strombocarpa pubescens* (Benth.) A. Gray.)
Sedge, *tloliyesze*—"plant that stands next to horse" (*Cyperus fendlerianus* Boeckel)
Shepherd's purse (*Capsella bursa-pastoris* Medic.)
Soapweed, datil, *etlode* (*Yucca baccata* Torr.)
Sotol, *kogice*—"fire stick?" (*Dasylirion wheeleri* S. Wats.)
Strawberry, *dakale* (*Fragaria bracteata* Heller)
Sumac (*Rhus cismontana* Greene)
Sumac, desert, *teiltcihisdlu*—"curly sumac" (*Rhus microphylla* Engelm.)
Sumac, three-leaved, lemita, skunk-bush, *teiltsi*—"smelly wood" (*Rhus trilobata* Nutt.)
Sunflower, common, afil, *nonyile* (*Helianthus annuus* L.)
Sunflower, *nandelebizaye* (*Helianthus canus* (Britton) W. & S.)
Tansy mustard, *tlaldeihntsi*—"bitter grain" (*Sophia incisa* (Engelm.) Greene)
Thistle, *tlobindadatlidje*—"plant with blue seeds" (*Cirsium pallidum* W. & S.)
Unicorn plant, *daayadebitabizaye*—"unicorn plant with small leaves" (*Martynia louisiana* Mill.)

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Vetch, *libida*—"horses food" (*Vicia mollotoides* W. & S.)
Walnut, nogal, *kaltsodo*—"that which one breaks" (*Juglans major* (Torr.) Heller)
Wood-sorrel, *itadnkodje*—"sour weed" (*Oxalis violacea* L.)
Gooseberry, *daudje*—(*Ribes lepthanthus* A. Gray)
Gooseberry, *daudje*—(*Ribes pinetorum* Greene)
Grass, bunch, *tlaltso*—"*big grass*" (*Sporobolus airoides* Torr.)
Grass, marsh foxtail, *lostsobitso*—"rat tail" (*Alopecurus aristulatus*
Grass, mesquite, *tlo*—"*grass*" (*Muhlenbergia wrightii* Vasey)
Grass sacaton (*Sporobolus wrightii* Munro)